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SYSTEM FOR, AND METHOD OF, PROCESSING QUADRATUREAMPLITUDE MODULATED SIGNALSAbstract of the Disclosure

Analog signals encoded with quadrature amplitude modulation (QAM) pass through a coaxial cable at a particular baud rate. These signals have a carrier frequency individual to the TV station being received. They are mixed with signals from a variable frequency oscillator to produce signals at a particular intermediate frequency (IF). An analog-digital converter (ADC) converts the IF signals to corresponding digital signals which are demodulated to produce two digital signals having a quadrature phase relationship. After being filtered and derotated, the digital signals pass to a symmetrical equalizer including a feed forward equalizer (FFE) and a decision feedback equalizer (DFE) connected to the FFE in a feedback relationship. The DFE may include a slicer providing amplitude approximations of increasing sensitivity at progressive times. Additional slicers in the equalizer combine the FFE and DFE outputs to provide the output data without any of the coaxial cable noise or distortions. The equalizer outputs and initially the derotation outputs, and the slicer outputs, servo (1) the oscillator frequency to obtain the IF frequency, (2) the ADC sampling clock to obtain the digital conversion at a rate related to the particular baud rate and (3) the derotator. The servos may have (1) first constants initially after a change in the station selection and (2) second time constants thereafter. The ADC gain is also servoed (1) initially in every ADC conversion and (2) subsequently in every nth ADC conversion where $n = \text{integer} > 1$. The above recover the QAM data without any of the coaxial cable noise or distortions.

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